QUALITY MANAGEMENT, ENVIRONMENTAL MANAGEMENT AND FIRM PERFORMANCE IN THE SPANISH HOTEL INDUSTRY

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ABSTRACT:

The link between quality management and environmental management systems and firm performance has traditionally been an important topic in the operations management literature. However, only few studies have jointly analysed these two management systems. In this respect, no conclusive results have so far been obtained about the relationship between these three variables. Additionally, the analysis in a service sector such as tourism has been less deep than in manufacturing sectors. The aim of this study is to identify the degree of commitment of Spanish 3-to-5-star hotels to quality management and environmental management and to test whether those hotels most strongly committed to these two management systems are the ones which reach the highest performance levels. Among the managerial implications derived from this study stands out that hoteliers are given a straightforward description of the sector's behaviour patterns in relation to quality and environmental management, along with the opportunity to know which variables they should improve in order to increase their degree of commitment.

1. INTRODUCTION

The link between total quality management (TQM) and environmental management systems and firm performance has traditionally played a relevant role in the field of operations management. In the field of TQM (Flynn *et al.*, 1995; Powell, 1995; Easton and Jarrell, 1998; Samson and Terziovski, 1999; Kaynak, 2003; Prajogo and Sohal, 2006) and environmental management (Klassen and McLaughlin, 1996; Álvarez *et al*., 2001; Link and Naveh, 2006), several empirical studies have found a positive link between these two management systems and firm performance. However, no conclusive results have so far been obtained about the existence of this relationship.

A debate on the positive and negative effects of TQM and environmental management is thus being staged in the literature. Findings suggest that studies may provide mixed results. Nevertheless, a vast majority of works show positive results; so, arguably, implementing effective TQM programmes (Hendricks and Singhal, 1997) can be expected to improve performance. The same holds true for environmental management studies (Álvarez *et al*., 2001).

In the hotel industry, establishments are concerned about product and service quality (Johns, 1995; Kimes, 2001) because that quality can influence performance (Gustafsson *et al.*, 2003; Antony *et al.*, 2004) causing internal impacts through processes and external ones through the market. Internal impacts on performance are related to the internal functioning of organisations, whereas external ones have to do with the effects of quality on customer satisfaction and the demand. It can therefore be said that TQM commitment may influence firm performance in the hotel industry. Similarly, environmental management may have direct and indirect impacts on hotel performance and tourism destination competitiveness (Mihalič, 2000; Chan, 2005), direct impacts being related to the hotel's internal management while indirect ones improve its performance as a result of the increased competitiveness of the destination where the establishment is located.

The literature review has shown the positive effects of these management systems on manufacturing and service firms in general and on the hotel industry in particular. Based on this review, TQM and environmental management have been analysed in manufacturing and service firms, although the number of studies that have analysed these systems within service organisations is smaller (Sureshchandar *et al.*, 2001; Gustafsson *et al.*, 2003). Moreover, although several authors have examined the practices of TQM hotels (Camisón, 1996; Partlow, 1996) and environmental management hotels (Kirk, 1998; Chan and Wong, 2006), the link between TQM, environmental management and firm performance has not been examined as deeply in the hotel industry literature as in the TQM and environmental literature. Additionally, few studies have jointly analysed these two management systems. Accordingly, more research is needed to fill these gaps in the hotel industry and in the operations management literature.

The aim of this paper is twofold: (1) to identify the TQM and environmental commitment levels at 300 3-to-5-star Spanish hotels; and (2) to test the link between those commitment levels and firm performance. The present study makes a contribution in two main areas. Firstly, it jointly analyses TQM and environmental management, together with their impacts on performance. Secondly, considering that most of the empirical studies dedicated to TQM and environmental management refer to manufacturing firms and that only a few have analysed organisations belonging to the service sector in general and the hotel industry in particular, this paper tries to fill this gap in the empirical literature through an examination of Spanish hotels.

The paper is organised as follows. First, the link between TQM, environmental management and firm performance is reviewed. Then, after a description of the study methods, a section is dedicated to the results obtained. The paper finishes with the main conclusions.

2. THEORETICAL BACKGROUND

2.1 The quality management-firm performance relationship

TQM implementation in firms often shows that costs can be reduced and differentiation levels increased (Belohlav, 1993; Grant, 2002). In this sense, Deming (1982) points out that higher quality implies lower costs and increased productivity, which in turn gives the firm a greater market share and enhanced competitiveness levels. This idea suggests that TQM impacts on performance, as shown in the literature. When it comes to examining this link, studies tend to focus on TQM and the ISO 9001 certification for the purpose of analysing the quality management variable (one can even find instances of papers which have measured quality in relation to the firm's award-winning record).

Regarding studies which have examined the link between TQM and performance, a distinction must be made between those which measure TQM as a single construct and the rest, which use a number of different dimensions (TQM is most commonly seen as a set of dimensions —e.g. leadership, people management, customer focus, supplier management, planning, process management and continuous improvement— and authors often apply perceptual measures for these elements). These studies have found that TQM has positive effects on firm performance (Flynn *et al.*, 1995; Powell, 1995; Hendricks and Singhal, 1997; Easton and Jarrell, 1998; Samson and Terziovski, 1999; Curkovic *et al.*, 2000;

Kaynak, 2003; Terziovski *et al.*, 2003; Prajogo and Sohal, 2006). According to some of these works, TQM success critically depends on soft aspects. For example, Powell (1995) shows that quality management success critically depends on executive commitment, employee empowerment and organisation openness. Samson and Terziovski (1999) identify significant positive relationships between organisational performance and leadership, people management and customer focus. Dow *et al.* (1999) find that three out of their nine quality management factors have a significant positive association with firm performance; and these three critical soft factors in question are workforce commitment, shared vision, and customer focus. Terziovski *et al*. (2003) conclude that the quality culture has an effect on business performance and that the individual factor found to contribute the most to this item is customer focus. Nevertheless, other scholars have shown that some firms do not achieve this effect (Boje and Winson 1993; Taylor and Wright, 2003), which may be due to the motivation to implement TQM (e.g. external or institutional reasons), an ineffective implementation or the lack of management support, amongst other reasons.

Similarly, regarding studies devoted to the effects of ISO 9000 certification on performance, they have found that the effects of the ISO 9001 standards are not so clear. There are some studies according to which ISO 9000 certified firms do not outperform those without such a certification (Singels *et al.*, 2001; Tsekouras *et al.,* 2002), while others argue that this standard might actually have a slight impact on some financial variables (Wayhan *et al,* 2002). A third group of studies states that the ISO 9000 certification allows a firm to experience better internal processes and to achieve a better bottom line through greater profitability as well as stronger exports. Thus, certified firms outperform financially non-certified ones (Chow-Chua *et al*., 2003), which means that ISO 9000 certification is associated with improvements in financial performance. These improvements in overall performance are largely attributed to improved internal business processes (Sharma, 2005). Nevertheless, other authors have reached controversial results. For instance, Martínez-Costa and Martínez-Lorente (2006) point out that ISO 9000 certification has a negative effect on firm results, mainly in terms of earnings and ROA.

It follows from this review that a debate on the positive and negative effects of quality management is being staged in the literature. Findings suggest that studies may provide conflicting results. Nevertheless, a vast majority of works show positive results and, therefore, arguably, the implementation of effective TQM programmes (Hendricks and Singhal, 1997) and ISO 9000 systems (Naveh and Marcus, 2004) can improve performance.

When examining the effects of quality management on firm performance, this group of studies has measured firm performance as quality performance, as financial performance or as both. In relation to quality performance, which is measured perceptually in most cases, the measurements most often used refer to the following aspects: quality management results; customer satisfaction; percentage of defects; cost of quality; quality product; on-time delivery; productivity; and people results (e.g. employee morale). Regarding financial performance, this variable includes: revenue growth; profitability; net income to sales; and net income to assets. Additionally, authors employ objective measures, perceptual ones and some even combine both types of measures at times. This shows that financial performance may be measured from primary or secondary data or from both sources (Venkatraman and Ramanujam, 1986), which in turn suggests that quality performance acts as a mediator variable between quality management and financial performance.

These studies, which are focused on manufacturing firms, on the service sector, and on both sectors, show positive impacts on performance and indicate no differences among sectors. Thus, manufacturing and service firms can successfully adopt quality management because quality performance levels do not differ significantly between these two industries (Prajogo, 2005).

Within the service industry, hotels show a concern for product and service quality (Johns, 1995; Kimes, 2001) because this quality can have an effect on performance (Gustafsson *et al.*, 2003; Antony *et al.*, 2004). Hotels are now in a better position to compete in international destinations, which is why international competition has increased, not only between destinations but also between accommodation establishments, to which must be added that tourists are increasingly demanding and do not only focus on

the price. Within this scenario, hotel enterprise competitiveness is all about improving performance through better service quality and the search for differentiation (Poon, 1993). Greater competitiveness has made quality become a key factor for hospitality companies (Ingram and Daskalakis, 1999; Costa, 2004).

Hence, quality can influence performance within the hotel industry in two complementary ways. It can cause (a) internal impacts through processes, and (b) external impacts through the market. Internal impacts on performance are related to the internal functioning of organisations (e.g. increase in productivity, improvement in efficiency and reduction in costs and waste). So, quality can improve the competitiveness levels of hotel establishments, as well as their profitability through process standardisation, waste reduction, a more effective service and fewer errors. Instead, external impacts on performance have to do with the effects of quality on customer satisfaction and the demand (e.g. increasing sales and market share, keeping tourism relationships, attracting new tourists, achieving higher tourist satisfaction levels and an improved image). It can thus be said that TQM commitment may influence firm performance in the hotel industry.

2.2 The environmental management-firm performance relationship

An increasing number of forums and debates are being devoted to the environmental responsibility of firms, an aspect which should not only be approached from the point of view of social responsibility toward the environment but also from the perspective of economic performance or success.

If environmental management improved hotel performance levels, it could become a key success factor, as well as a source of competitive advantage. The impacts caused by the implementation of an effective environmental management scheme on a hotel's performance may be very varied, but can be divided into two broad groups: direct and indirect. Direct impacts are related to the hotel's internal management, whereas indirect ones improve its performance as a result of the increased competitiveness of the destination where the establishment is located

As for the direct impacts of environmental management on performance, the distinction between cost and differentiation competitive advantages (Porter, 1980) provides a useful framework to analyse these impacts. Pollution prevention can allow a firm to save control costs, input and energy consumption, and also to reuse materials through recycling (Shrivastava, 1995a; Hart, 1997; Chan and Lam, 2003; Chan, 2005). Thus, the essential purpose of eco-efficiency is to produce and deliver goods more cost-efficiently while simultaneously reducing ecological impact and resource intensity, and minimising material as well as energy intensity (Knight, 1995; Starik and Marcus, 2000). Pollution prevention can consequently help firms to reach a win-win situation, from which both the firm and the environment will benefit. This idea reflects an approach that is known as 'the Porter Hypothesis' (Porter and Van der Linde, 1995). Nevertheless, this positive view coexists with a more traditional stance which postulates that an improvement in the environmental impact caused by an enterprise leads to a reduction in its profitability. It is suggested that compliance with environmental regulations means having to incur significant costs, which reduces the capacity to compete (Jaffe *et al.* 1995). Furthermore, this traditional view responds to the claims made by the supporters of 'the Porter Hypothesis' saying that, although the use of some simple prevention measures can easily bring cost savings, other more ambitious prevention measures may involve costs that exceed the savings to be derived from them (Walley and Whitehead, 1994).

Environmental management also fosters product differentiation within the hotel industry. For example, a reduction of pollution levels will probably increase the demand from environmentally-sensitive consumers, since the ecological characteristics of products can become a new competitive argument appreciated by these 'green' customers (Elkington, 1994; Chan and Wong, 2006) and hotels can acquire a better ecological reputation (Shrivastava, 1995b; Miles and Covin, 2000). Tourists have become increasingly demanding about the product and thus force hoteliers to adapt to their new tastes and preferences, among which stands out a greater respect for the environment. The WTO (1998:344) states that *"guest perception about the accommodation service quality level is influenced by such factors as the state of conservation of the environment, pollution levels, noise pollution, [...].*

Therefore, achieving individual improvements does not suffice to improve tourism quality; environmental factors (landscape, pollution [...]) should also be adapted to customer expectations". Thus, if hotels apply an effective environmental management, they are likely to improve their guests' perception of environmental quality both about the hotel and about the tourism product as a whole (Kirk, 1998; Chan and Wong, 2006), apart from offering a healthy location and obtaining differentiation badges such as the 'eco-labels'.

Regarding indirect impacts, a large number of studies have concluded that environmental management improves destination competitiveness (Hassan, 2000; Mihalič, 2000; Huybers and Bennet, 2003). Tourism activity is heavily dependent on the environment. So, if the destination is properly looked after, the resources that appeal to tourists are preserved over time and, therefore, destinations can continue to be differentiated from one another, which increases their own competitiveness and that of the hotels located in them (Mihalič, 2000; Hu and Wall, 2005). Keeping the destination in good condition is therefore necessary to guarantee the future viability of the tourist firms operating in it. Hotel choice decisions are made at two levels, particularly so in holiday tourism. First, the destination competes with other destinations, and second, once tourists have selected one destination, its hotels fight to become those tourists' first choice.

It would be advisable for hotels to work towards the implementation of a sustainable tourism policy that can preserve their destinations and consequently their first competitive level. This is essential because a growing social concern for the environmental situation is emerging among tourist motivations. Environment-related issues are beginning to influence vacation and accommodation motivations, as tourists demand some evidence of environmental concern on the part of hotels (Miller, 2003). Additionally, when hotels show greater concern for environmental management, they also enhance destination residents' quality of life, thus improving the local community's predisposition to accept tourism-based initiatives (Guthunz and Krosigk, 1996; Swarbrooke, 1998). This becomes especially relevant in rural areas where inland tourism activities develop among residents who are not used to the presence of tourists.

The fact that all tourism subsectors, including hotels, are pursuing greater destination quality through environmental management may lead to an increase in value of the product (Mathieson and Wall, 1982), a rise in the number of tourists coming from more environmentally-aware segments, and more repeat visits (Hu and Wall, 2005), all of which will bring in more revenues to the hotel establishments located in the destination (Kirk, 1998).

2.3 The integration of quality management and environmental management

These business practices are being increasingly adopted by firms, very often jointly (Karapetrovic and Willborn, 1998; Wilkinson and Dale, 1999). In fact, environmental management offers a striking parallel with TQM (Kleiner, 1991; Klassen and McLaughlin, 1996). As it happens with quality, a long-term goal of environmental management consists in moving towards a proactive, preventive stance, incorporating environmental issues into product design, technology-related decisions, the entire manufacturing process, and customer service. Moreover, the TQM goal of "zero defects" closely parallels the "no waste" aim of environmental management-based systems. TQM focuses on waste insofar as it applies to process inefficiencies, whereas environmental management pays more attention to pollution in the form of air emissions and solid, hazardous waste. Because the two systems share a similar focus, it makes sense to use many of the TQM tools, methods and practices when implementing an environmental management system.

Thus, due to these and other parallels and also to the fact that research on the TQM side is more developed than that on the environmental management side, significant benefits are bound to derive from applying what has been learnt about TQM to environmental issues (Klassen and McLaughlin, 1993; Curkovic, 2003). This is why some organisations have decided to integrate their management systems.

3. STUDY METHODS

3.1 Population and sample

The population in this study is formed by 3-to-5-star Spanish hotels. These categories are seen as the most dynamic and innovative ones because they correspond to hotels with a wider range of characteristics and possibilities of showing a stronger commitment to TQM and environmental management. The main data source is the Official Hotel Guide published by *Turespaña.* The total population amounts to 3,900 hotels (2,532 3-star establishments; 1,235 4-star ones, and 133 5-star ones). A study of this population was carried out using a structured mail questionnaire with closed questions. A total of 300 hotel managers decided to collaborate in the study.

The characteristics of non-respondents were examined in order to check the degree to which this lack of response was significant. When the sample bias regarding the population from the variables category and the number of rooms and beds was compared, it turned out that the categories in the sample and in the population correlated significantly ($p<0.05$ Pearson's Chi Square) and that no significant differences existed between the number of rooms and beds in the sample and that in the population ($p>0.10$ Mann-Whitney's U).

3.2 Measurements

For the purpose of achieving the aims of this study, some scales were used to measure TQM and environmental management commitment and firm performance after reviewing the conceptual and empirical literature.

TQM commitment. A number of practices identified in a literature review served to measure the degree of commitment to TQM. In this sense, various measurement studies have developed a reliable, valid scale both in the industrial sector (Flynn *et al.*, 1994; Ahire *et al.*, 1996) and in the industrial and service sectors (Saraph, *et al.*, 1989; Badri *et al.*, 1995; Black and Porter, 1995, 1996; Grandzol and Gershon, 1998; Quazi *et al.*, 1998; Rao *et al.,* 1999; Conca *et al.*, 2004). Some of the common practices shown by these studies are: leadership, quality planning, training, people involvement, people management, customer focus, process management, supplier management, continuous improvement, and product design.

Along the same lines, other works have approached TQM from the perspective of the hotel sector seeking to adapt those practices to this specific industry and to obtain a measuring scale for the variable TQM in hotels. Bretier and Bloomquist (1998) identify 12 quality principles: leadership, customer-orientation, empowerment, process improvement, fact-based decisions, training and development, rewards and recognition, flexibility, tools and techniques, strategic quality management, work teams, and cooperation with suppliers. Harrington and Akehurst (1996) focus on finding out if hotels offer their customers satisfaction questionnaires and if those questionnaires are anonymous, if interviews are held with customers and if the top management has some direct contact with the latter, if a quality department is available, if group interviews are carried out and, finally, if there is employee observation and feedback. Arasli (2002a,b) measures the variable TQM considering seven constructs: leadership, work teams, empowerment, employee satisfaction, participation, training and change. Camisón (1996) and Camisón *et al.* (1996) use 33 items for managers to assess the nine EFQM model criteria and 23 items for customers to do the same.

The present study utilises 10 items (see Table 1) valued with a seven-point Likert scale ranging from 1 (minimum degree of commitment) to 7 (maximum degree of commitment) with the aim of measuring TQM commitment adopted from the common source of the previously-identified practices and their adaptation to the hotel sector.

Environmental management commitment. It was decided to use the scale validated by Álvarez *et al.* (2001) and made up of 12 items that appear in Table 1. These items were valued with a seven-point

Likert scale ranging from 1 (minimum degree of commitment) to 7 (maximum degree of commitment).

Performance. The present study considers performance in terms of financial results and operational indicators (Venkatraman and Ramanujam, 1986) specific to the hotel industry measured from primary data. Objective and perceptual variables are used to measure performance. This combination of variables is of paramount importance in the hotel industry because these accommodation properties commercialise intangible experiences (Reichel and Haber, 2005). As for objective performance variables, three of them have been measured, namely: occupancy rate per room, gross operative profit (GOP) and GOP per available room per day (GOPPAR per day). The variables GOP and GOPPAR per day cover 10 intervals in which hotel managers had to locate them. The percentiles 0, 5, 10, 25, 50, 75, 90, 95 and 100 of the mean values for these variables during the previous five years (from 2000 to 2004) in the 221 Spanish hotel firms with a single 3-to-5-star establishment obtained from the SABI (*Sistema de Análisis de Balances Ibéricos*) database were calculated. As for perceptual performance variables, they come from the adaptation of a scale developed by Camisón (1999) and formed by 10 items valued from 1 to 7 (1 meaning 'much worse than competitors', and 7 meaning 'much better than competitors') (see Table 1).

3.3 Perceptual measure reliability and validity

This section assesses the validity and reliability of the perceptual variables used. Regarding validity, the most widely accepted classification is the one which distinguishes content, construct and criterion-related validity. An instrument has content validity if researchers agree that the instrument is made up of a group of items covering the issues to be measured. Measure content validity is assured by an extensive review of the literature and the expert judgement of academics and professionals in the hotel industry.

Construct validity is assessed through a factor analysis for each measure (see Table 1). As for TQM commitment, all items are grouped together in a single factor. However, two latent variables were obtained in the area of environmental commitment: *basic environmental commitment* (a factor in which the highest scores are obtained in the items associated with business costs); and *advanced environmental commitment* (a factor which contains the items representing a greater effort and commitment on the part of the enterprise). Additionally, two latent variables were identified on the scale used to measure perceptual performance: *competitive performance* (as all the variables with significant scores in this factor could be measured through the firm's accounting or financial ratios); and *stakeholder satisfaction* (which includes employee and customer satisfaction levels).

Concerning criterion-related validity, it is measured through the correlation between the different performance variables and the remaining strategic variables. The correlation matrix shows that most of the predictor variables are significantly related ($p<0.05$) to performance, which provides an evidence of criterion-related validity.

As for reliability, it can be estimated using Cronbach's alpha, which measures the internal consistency of multidimensional scales. In this respect, the minimum advisable value —0.7 (Nunnally, 1978)— is exceeded in every single factor. It must finally be pointed out that the new latent variables found will be considered in later analyses.

Table 1. Factor analysis and reliability

Variables	Factor 1	Factor 2
TQM commitment		
1. The management is committed to quality	0.726	
2. Customers' present and future needs are known to the firm	0.697	
3. The firm collaborates with intermediaries to improve the product	0.632	
4. The firm collaborates with suppliers to improve the product	0.725	
5. The establishment staff receive training in quality-related issues	0.820	
6. Employee motivation is encouraged	0.822	
7. All the staff are involved in the elaboration of the product offered	0.832	
8. Improvements are identified in the service delivery process	0.859	
9. Objective compliance is monitored and deviations are corrected	0.849	
10. A culture focused on the continuous improvement of the product offered is at work	0.866	
Cronbach's α	*0.93*	
Eigenvalue per factor	*6.188*	
Determinant	*0.0007*	
KMO	*0.917*	
Bartlett's significance test of sphericity	*0.000*	
Total % of variance explained	*61.88%*	
Environmental management commitment		
Basic environmental management commitment		
1. Purchase of ecological products	0.343	**0.633**
2-Environmental collaboration is made easier for the customer	0.485	**0.496**
3-Reduction in the use of environmentally dangerous products	0.236	**0.771**
4-Energy-saving practices	0.117	**0.860**
5-Water-saving practices	0.114	**0.871**
6-Selective collection of solid residues	0.326	**0.505**
Advanced environmental management commitment		
7. The firm trains its employees in environmental matters	**0.714**	0.412
8-Compensation is given to employees with environmental initiatives	**0.829**	0.151
9-Use of ecological arguments in marketing campaigns	**0.820**	0.141
10-Organisation of environmental activities by the firm	**0.855**	0.119
11-The firm has a long-term environmental approach	**0.667**	0.407
12-Quantification of environmental savings and costs	**0.651**	0.429
Cronbach's α	*0.89*	*0.83*
Eigenvalue per factor	*5.992*	*1.587*
Determinant	*0.001*	
KMO	*0.904*	
Bartlett's significance test of sphericity	*0.000*	
Total % of variance explained	*63.17%*	
Performance		
Competitive performance		
1. Room occupancy rate	**0.591**	0.197
2-Market share gain	**0.619**	0.355
3-Average sales growth in the last five years	**0.641**	0.322
4-Income per room	**0.838**	0.179
5-Total gross profit	**0.904**	0.090
6-Gross profit per room	**0.890**	0.117
7-Wealth creation (Accounting value of the firm with respect to its market value)	**0.813**	0.248
8-Capacity to generate profit in times of crisis	**0.800**	0.217
Stakeholder satisfaction		
9-Customer satisfaction level	0.225	**0.833**
10-Employee satisfaction level	0.155	**0.862**
Cronbach's α	*0.92*	*0.71*
Eigenvalue per factor	*5.510*	*1.188*
Determinant	*0.002*	
KMO	*0.880*	
Bartlett's significance test of sphericity	*0.000*	
Total % of variance explained	*66.98%*	

4. RESULTS

One of the objectives pursued in this study was to characterise the extent to which hotels commit themselves to TQM and to environmental management, for which the hotels were grouped by means of a two-stage cluster analysis (Hair *et al*., 1995; Punj and Stewart, 1983). First, a hierarchical cluster was applied with the Ward Method so as to determine the number of strategic groups. Then, a non-hierarchical cluster served to classify the hotels into the different groups obtained. A solution was found in this way with three groups distributed according to the criterion of percentual change of the agglomeration coefficient and the dendogram.

The data for the interpretation of the strategic groups obtained are provided in Table 2. Two ways of validating the cluster solution were used. The existence of significant differences between groups in the factors and in the variables was checked first. A second way of validating the cluster solution was to perform a discriminant analysis which revealed that 99.00% of the cases grouped were correctly classified in their respective strategic groups.

Table 2. TQM and environmental management commitment levels.

Variables	Group 1 n=91	Group 2 n=158	Group 3 n=51	Mean	Sign.
TQM commitment	6.29	5.73	4.11	5.62	0.000(1)
Basic environmental management commitment	6.16	5.05	3.72	5.16	0.000(1)
Advanced environmental management commitment	5.21	2.99	1.73	3.46	0.000(1)
Quality and environmental management commitment	10.92	8.80	6.14	8.99	0.000(1)
TQM commitment items					
▪ The management is committed to quality	6.74	6.32	5.08	6.23	0.000(2)
▪ Customers' present and future needs are known to the firm	6.09	5.75	4.67	5.67	0.000(2)
▪ The firm collaborates with intermediaries to improve the product	5.97	5.52	4.12	5.42	0.000(2)
▪ The firm collaborates with suppliers to improve the product	6.34	5.70	4.59	5.71	0.000(2)
▪ The establishment staff receive training in quality-related issues	6.22	5.37	3.35	5.28	0.000(2)
▪ Employee motivation is encouraged	6.18	5.49	3.63	5.38	0.000(2)
▪ All the staff are involved in the elaboration of the product offered	6.21	5.78	3.84	5.58	0.000(2)
▪ Improvements are identified in the service delivery process	6.27	5.84	4.27	5.70	0.000(2)
▪ Objective compliance is monitored and deviations are corrected	6.42	5.74	3.80	5.61	0.000(2)
▪ A culture focused on continuous improvement of the product offered is at work	6.46	5.80	3.71	5.65	0.000(2)
Basic environmental management commitment items					
▪ Purchase of ecological products	5.62	4.24	2.84	4.42	0.000(2)
▪ Environmental collaboration is made easier for the customer	5.95	4.28	3.12	4.59	0.000(2)
▪ Reduction in the use of environmentally dangerous products	6.30	5.32	3.73	5.35	0.000(2)
▪ Energy-saving practices	6.40	5.70	4.39	5.69	0.000(2)
▪ Water-saving practices	6.37	5.54	4.31	5.59	0.000(2)
▪ Selective collection of solid residues	6.33	5.22	3.90	5.34	0.000(2)
Advanced environmental management commitment items					
▪ The firm trains its employees in environmental matters	5.55	3.43	1.75	3.79	0.000(2)
▪ Compensation is given to employees with environmental initiatives	4.37	2.10	1.31	2.65	0.000(2)
▪ Use of ecological arguments in marketing campaigns	4.86	2.46	1.80	3.09	0.000(2)
▪ Organisation of environmental activities by the firm	4.63	2.31	1.35	2.86	0.000(2)
▪ The firm has a long-term environmental approach	6.01	4.09	2.24	4.37	0.000(2)
▪ Quantification of environmental savings and costs	5.81	3.58	1.90	3.98	0.000(2)

(1) F ANOVA.
(2) Pearson's Chi-square.

The interpretation of the three groups of hotels obtained is as follows. Group 1 – Proactive Hotels. It is the second largest group, and is formed by the hotels showing the highest TQM and basic and advanced environmental management commitment level. Group 2 – Intermediate Hotels. This is the group in which most hotels are located. Its commitment to TQM is above the average, but in terms of environmental commitment, this group is below the average, both in basic and in advanced environmental management commitment, as well as in most of the items corresponding to these two strategies. Group 3 – Reactive Hotels. It is the smallest group and its commitment levels, whether to

TQM or to environmental management, are always below-average, so much so that they even obtain the lowest scores for each one of the items.

From now on, a comparison is drawn to verify the potential existence of differences in some relevant hotel sector variables for each one of these groups. The variables compared are: category, size, facilities available in the hotel, chain affiliation, and room rate. As can be seen in Table 3, TQM and environmental commitment levels increase in parallel with category, size, facilities, chain affiliation likelihood, and room rate. These results may be due to the fact that the hotels owning the most resources are the ones which show a strongest commitment to TQM and environmental management.

Table 3. Comparison of category, size, facilities, chain affiliation, and room rate between groups.

Variables	Proactive	Intermediate	Reactive	Sign.
Category	3.59	3.45	3.29	0.044(1)
Size	150.56	118.53	100.31	0.065(2)
Facilities	18.40	16.97	16.20	0.019(2)
Chain affiliation	0.51	0.37	0.47	0.078(1)
Room rate	128.73€	113.25€	98.05€	0.018(2)

(1) Pearson's Chi-square.
(2) F ANOVA.

Finally, the differences in performance between the hotel groups were tested. It can be inferred from Table 4 that the group of proactive hotels is the one with the highest performance levels and also that performance decreases as TQM and environmental commitment levels go down (except for occupancy rate per room). Additionally, these differences are significant in the GOP (since size is bigger as commitment grows) and in competitive performance and stakeholder satisfaction (because, thanks to the higher degree of commitment to TQM and environmental management, hoteliers can have the impression that their competitiveness level possibly exceeds that of their known competitors). Finally, no significant differences have been obtained regarding occupancy rate per room, which could suggest that tourists do not decide to stay in one particular hotel because of its commitment to TQM and environmental management. Neither do differences exist in the GOPPAR per day, the performance variable which eliminates the 'size effect'.

Table 4. Differences in performance between groups.

Variables	Proactive	Intermediate	Reactive	F ANOVA
Occupancy rate per room	66.44%	62.84%	64.76%	0.260
GOP	4.59	3.89	3.71	0.016
GOPPAR per day	4.58	4.11	3.92	0.112
Competitive performance	4.96	4.51	4.44	0.000
Stakeholder satisfaction	5.68	5.33	4.99	0.000

5. CONCLUSIONS

TQM and environmental management are two management systems which have often been analysed separately, and their link to firm performance has not been significant in all the studies, even though internal and external impacts on performance associated with TQM along with direct and indirect impacts on performance associated with environmental management have been identified. Within such a context, this paper has examined the joint effects of these two management systems on firm performance. Additionally, the study has focused on the hotel sector, which has so far received far less literature attention than manufacturing sectors.

The findings reveal three types of hotels according to their degree of commitment to TQM and environmental management: proactive, intermediate, and reactive. Proactive hotels are the most TQM and environmental management committed, whereas reactive hotels are the lowest committed both to TQM and to environmental management. This paper has shown that the commitment level of these variables increases significantly as the hotel has more resources derived from its category, size, facilities and chain affiliation, and equally that significant differences in performance exist for three out of five variables measured. Nevertheless, it has been verified, too, that the stronger the commitment to TQM and environmental management, the higher the performance level. It seems, therefore, that the impact on performance will depend on the variable measured in each case. This all leads to the conclusion that quality and environmental management good practices and commitment levels do not necessarily account for firm performance in the hotel sector, as no significant differences in performance between hotels are generated. In other words, these management systems impact on a part of firm performance, because this performance is also going to be influenced by other elements such as variables of the destination.

This study has some managerial implications. It describes the TQM and environmental management behaviours followed in a world-renowned sun-and-sand tourism destination, which means that it simplifies the complex reality binding hotels as far as these two management tools are concerned. Furthermore, it identifies the most influential specific quality and environmental aspects in each group obtained, which can help hoteliers to identify the areas in which they should invest and the aspects in which improvements have to be made if they want to move from one group to another. It also shows that the concern for TQM and environmental management can improve firm performance. In this respect, these management systems can reduce costs and improve the hotel's image, which in turn can impact on operational performance and then on financial performance. However, because the results are not conclusive, one can only point out that these management systems may influence firm performance partly.

Finally, this study is subject to a number of limitations. It is based on a cross-sectional data, and the interviewees are hotel managers who would not openly admit not being interested in TQM and environmental management. Therefore, future research could focus on a longitudinal study, thus providing a way to support these associations, and ask other employees to take part in the survey and fill in the questionnaire as well. Nevertheless, the following inconveniences must be taken into account when trying to undertake research on this field in the future. Firstly, no databases providing time series about the variables measured here are available in the Spanish hotel industry and, secondly, the other possible employees to be interviewed can distort the results, since the hotel manager is the only person who truly knows the degree of development of all managerial factors and firm performance.

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